801P1082

FIG. 1

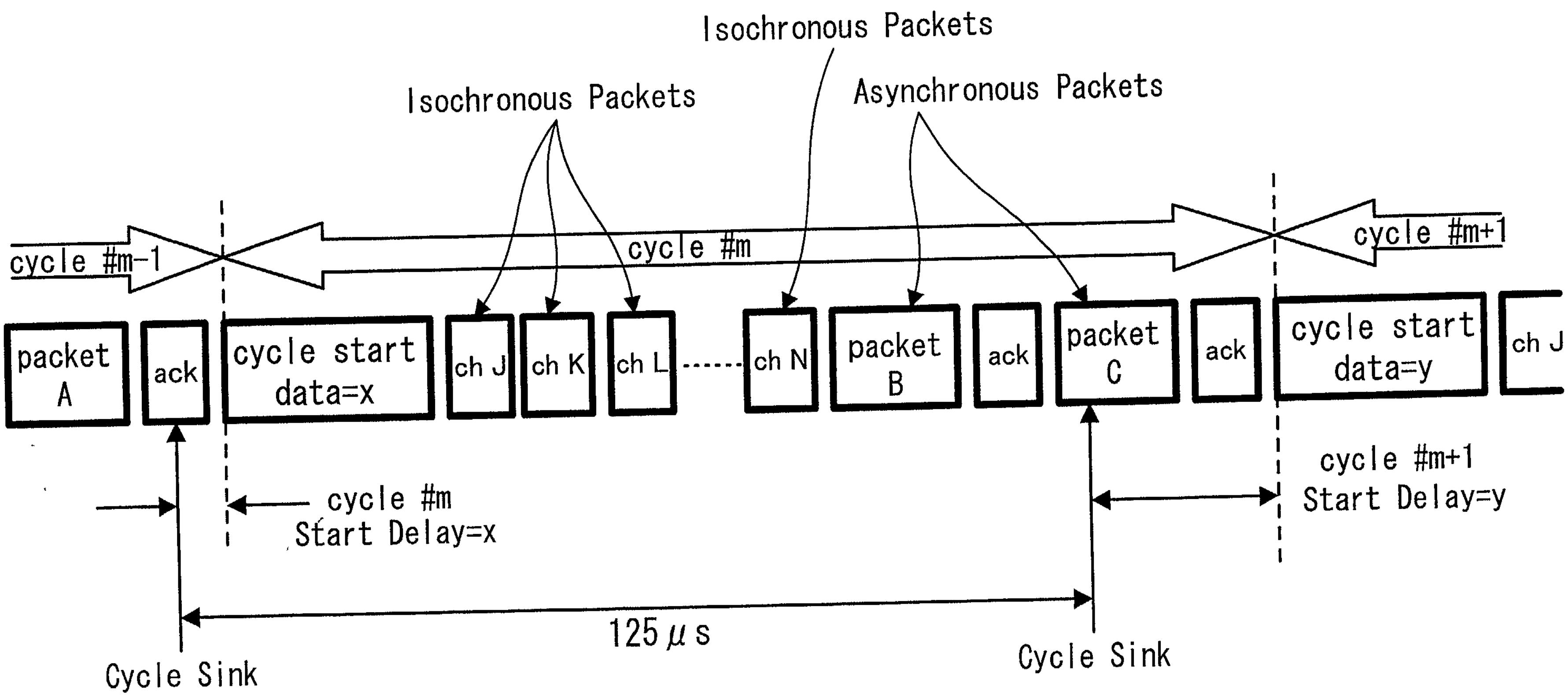


FIG. 2

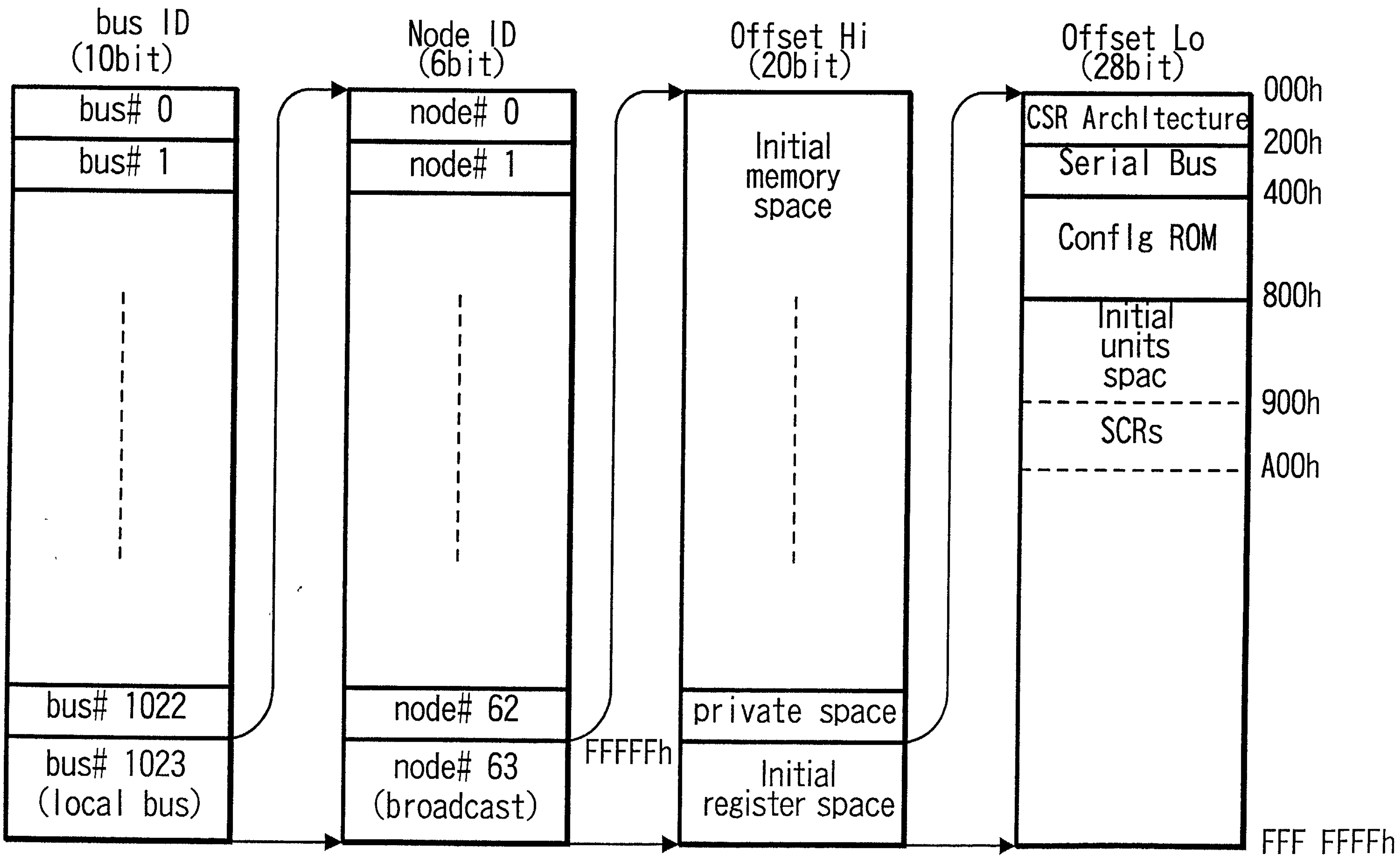

bus ID
(10bit)
bus# 0
bus# 1
bus# 1022
bus# 1023
(local bus)
Node ID
(6bit)
node# 0
node# 1
node# 62
node# 63
(broadcast)
FFFFFh
Offset Hi
(20bit)
Initial memory space
private space
Initial register space
Offset Lo
(28bit)
CSR Architecture
Serial Bus
Config ROM
Initial units spac
SCRs
000h
200h
400h
800h
900h
A00h
FFF FFFFh

FIG. 3

Offset	Designation	Function
000h	STATE_CLEAR	State and control data
004h	STATE_SET	Set state_clear bit
008h	NODE_IDs	Indicate node ID of 16 bits
00Ch	RESET_START	Start command reset
018h-01Ch	SPLIT_TIMEOUT	Specify maximum time of split
200h	CYCLE_TIME	Cycle time
210h	BUSY_TIMEOUT	Specify limit on retry
21Ch	BUS_MANAGER	Indicate ID of bus manager
220h	BANDWIDTH_AVAILABLE	Indicate band that can be assigned to isochronous communication
224h-228h	CHANNELS_AVAILABLE	Indicate the state where the channels are used

FIG. 4

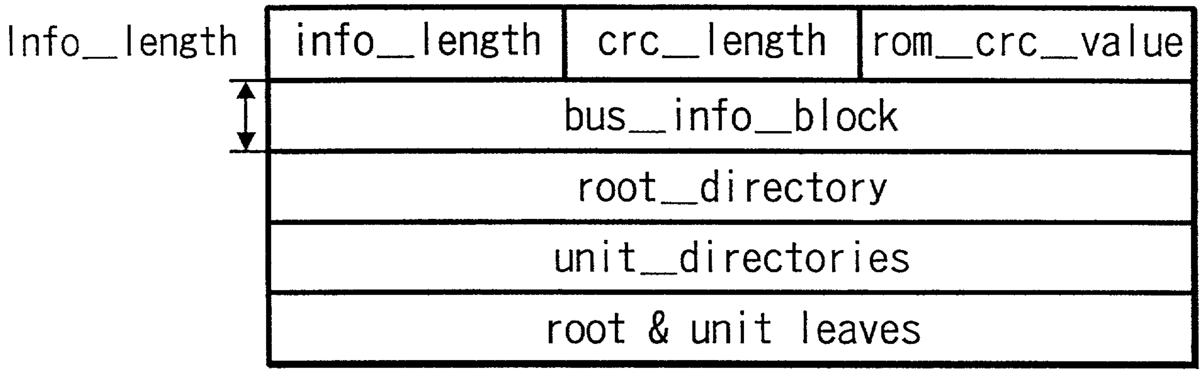

Info_length
info_length
crc_length
rom_crc_value
bus_info_block
root_directory
unit_directories
root & unit leaves

FIG. 6

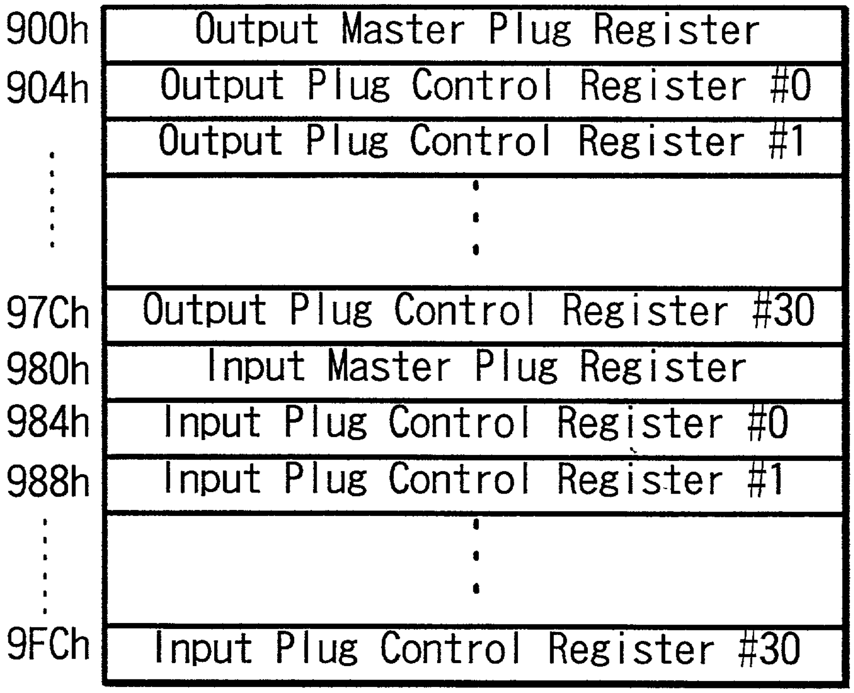

900h
Output Master Plug Register
904h
Output Plug Control Register #0
Output Plug Control Register #1
97Ch
Output Plug Control Register #30
980h
Input Master Plug Register
984h
Input Plug Control Register #0
988h
Input Plug Control Register #1
9FCh
Input Plug Control Register #30

FIG. 5

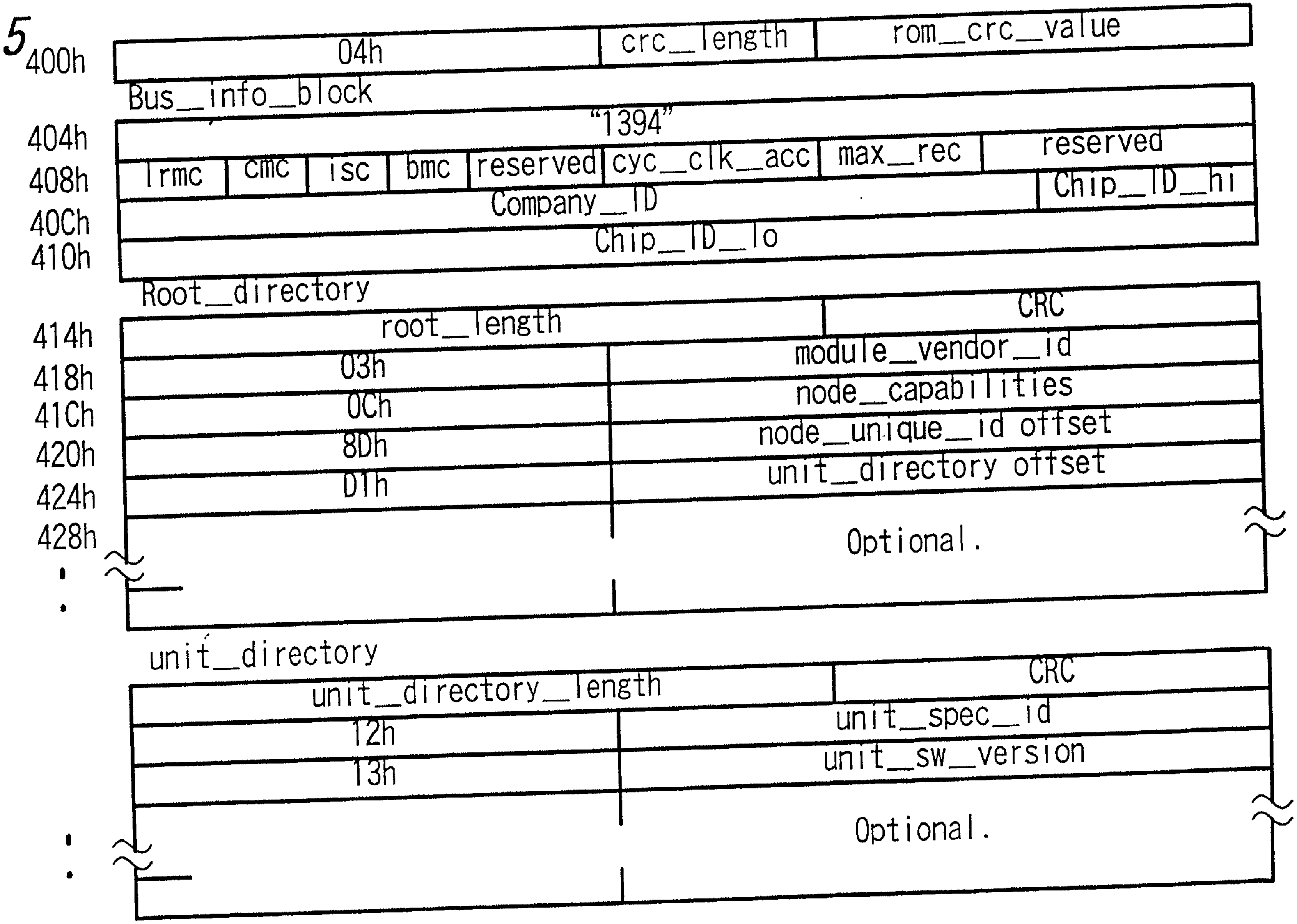

400h
04h
crc_length
rom_crc_value
Bus_info_block
404h
"1394"
408h
Irmc
cmc
isc
bmc
reserved
cyc_clk_acc
max_rec
reserved
40Ch
Company_ID
Chip_ID_hi
410h
Chip_ID_lo
Root_directory
414h
root_length
CRC
418h
03h
module_vendor_id
41Ch
0Ch
node_capabilities
420h
8Dh
node_unique_id offset
424h
D1h
unit_directory offset
428h
Optional.
unit_directory
unit_directory_length
CRC
12h
unit_spec_id
13h
unit_sw_version
Optional.

FIG. 7A

oMPR

data rate capability	Broadcast channel base	non-persistent extension field	persistent extension field	reserved	number of output plugs	
2	6	8	8	3	5	(bit)

FIG. 7B

oPCR [n]

on-line	Broadcast connection counter	point-to-point connection counter	reserved	channel number	data rate	overhead ID	payload	
1	1	6	2	6	2	4	10	(bit)

FIG. 7C

iMPR

data rate capability	reserved	non-persistent extension field	persistent extension field	reserved	number of input plugs	
2	6	8	8	3	5	(bit)

FIG. 7D

iPCR [n]

on-line	Broadcast connection counter	point-to-point connection counter	reserved	channel number	reserved	
1	1	6	2	6	16	(bit)

FIG. 8

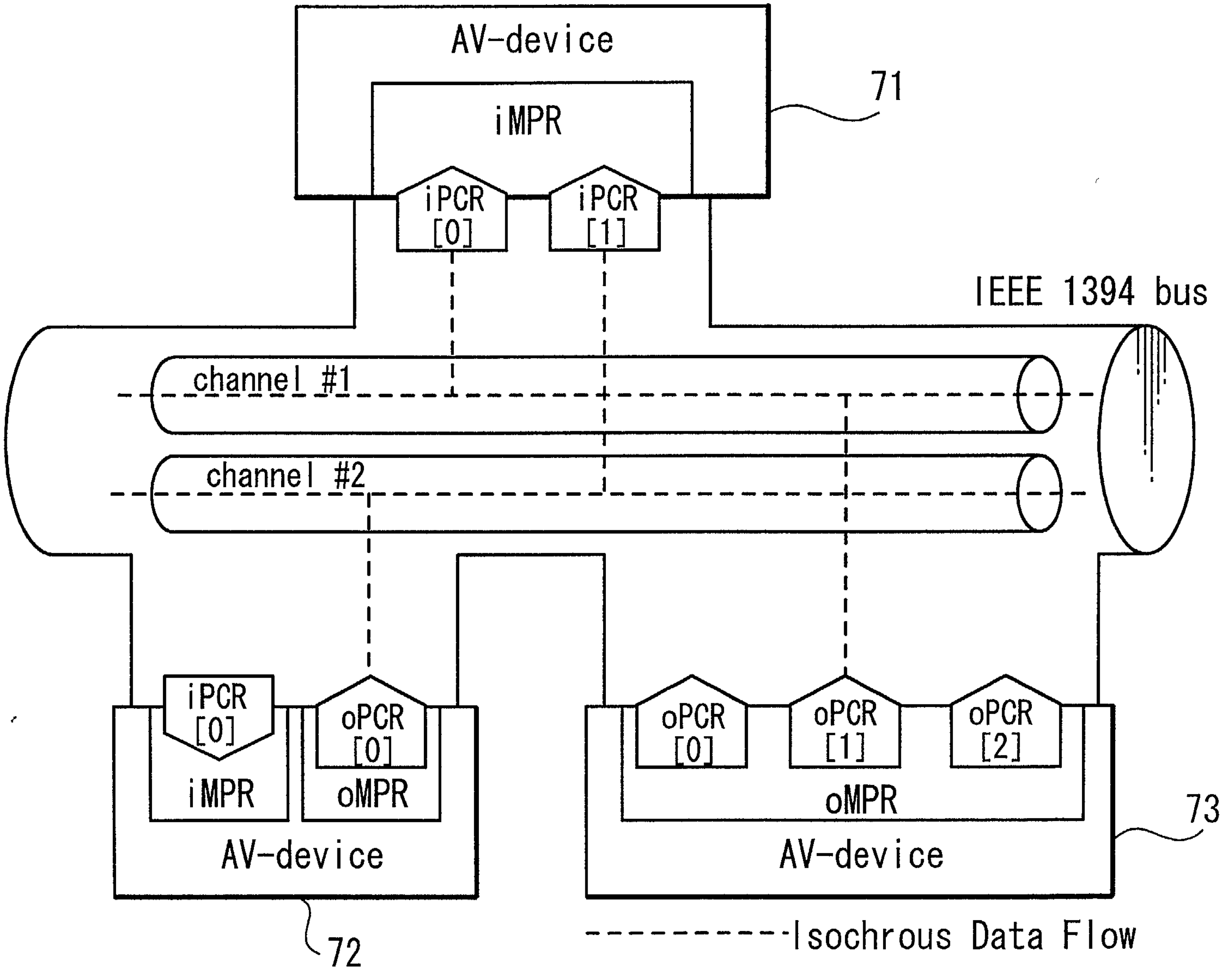

AV-device
iMPR
iPCR [0]
iPCR [1]
71
IEEE 1394 bus
channel #1
channel #2
iPCR [0]
iMPR
oPCR [0]
oMPR
AV-device
72
oPCR [0]
oPCR [1]
oPCR [2]
oMPR
AV-device
73
Isochrous Data Flow

FIG. 9

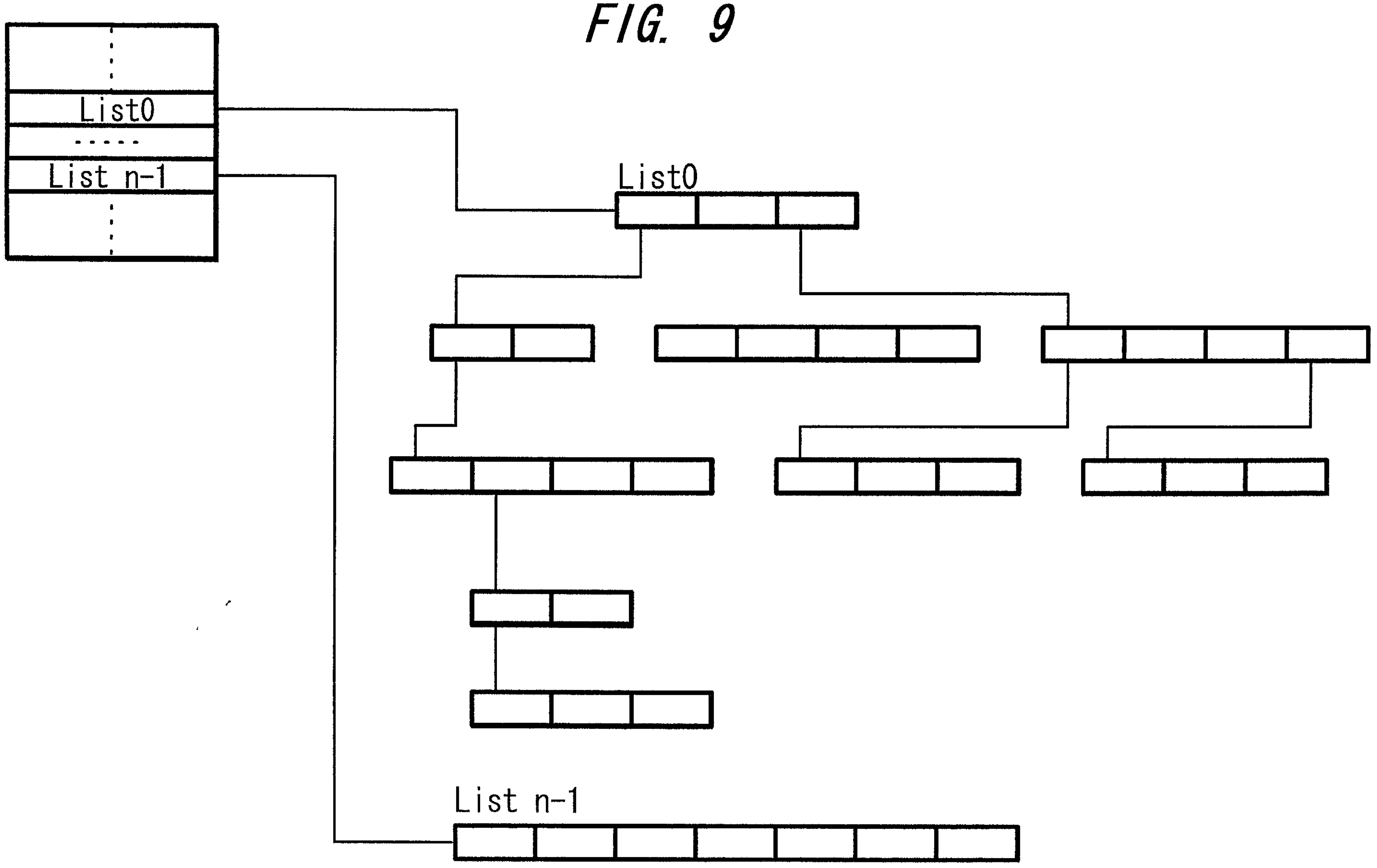


FIG. 10

The General Subunit Identifier Descriptor	
address	contents
$00\ 00_{16}$	descriptor_length
$00\ 01_{16}$	
$00\ 02_{16}$	generation_ID
$00\ 03_{16}$	size_of_list_ID
$00\ 04_{16}$	size_of_object_ID
$00\ 05_{16}$	size_of_object_position
$00\ 06_{16}$	number_of_root_object_lists(n)
$00\ 07_{16}$	
$00\ 08_{16}$	root_object_list_id_0
⋮	
⋮	⋮
⋮	root_object_list_id_n-1
⋮	
⋮	subunit_dependent_length
⋮	
⋮	subunit_dependent_information
⋮	
⋮	
⋮	manufacturer_dependent_length
⋮	
⋮	manufacturer_dependent_information
⋮	
⋮	

FIG. 11

generation__ID values	
generation__ID	meaning
00_{16}	Data structures and command sets as specified in the AV/C General Specification, version 3.0
all others	reserved for future specification

FIG. 12

List ID Value Assignment Ranges	
range of values	list definition
0000_{16}-$0FFF_{16}$	reserved
1000_{16}-$3FFF_{16}$	subunit-type dependent
4000_{16}-$FFFF_{16}$	reserved
1 000_{16} -max list ID value	subunit-type dependent

FIG. 13

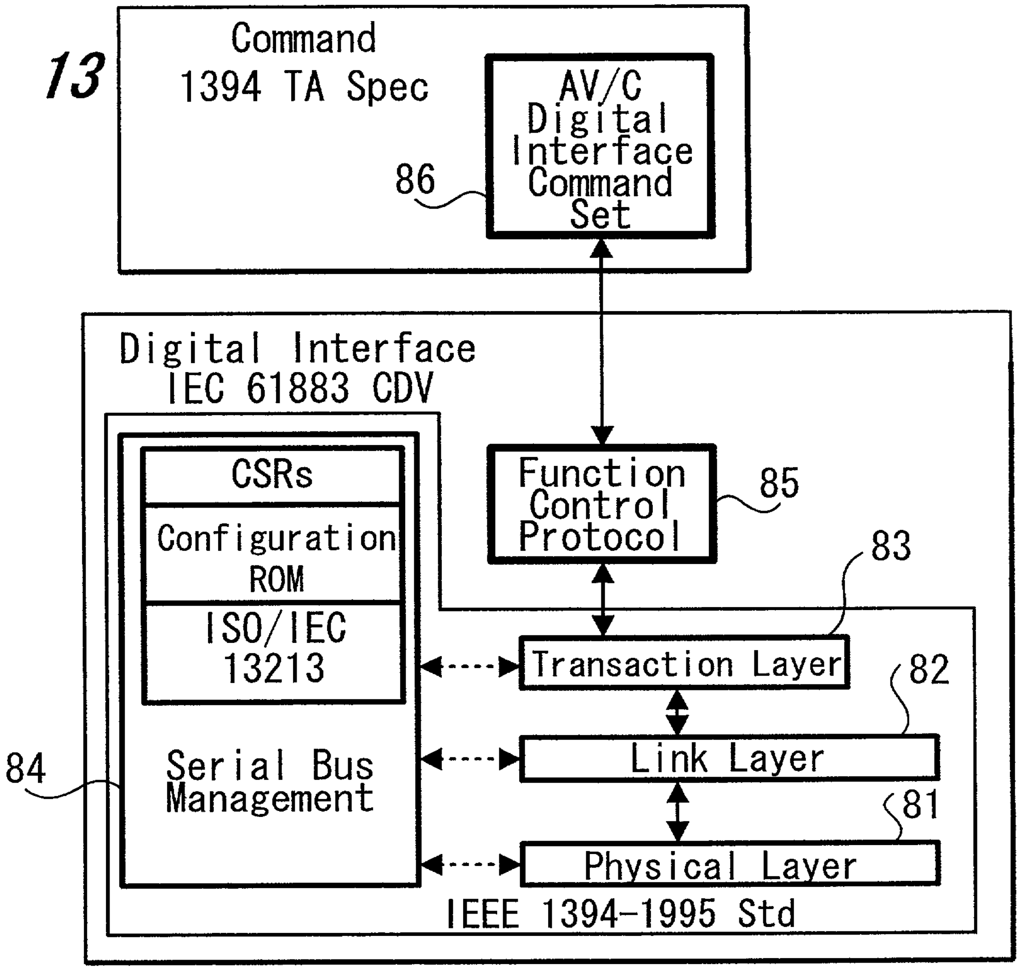

Command
1394 TA Spec
AV/C Digital Interface Command Set
86
Digital Interface
IEC 61883 CDV
Function Control Protocol
85
83
CSRs
Configuration ROM
ISO/IEC 13213
Transaction Layer
82
84
Serial Bus Management
Link Layer
81
Physical Layer
IEEE 1394-1995 Std

FIG. 14

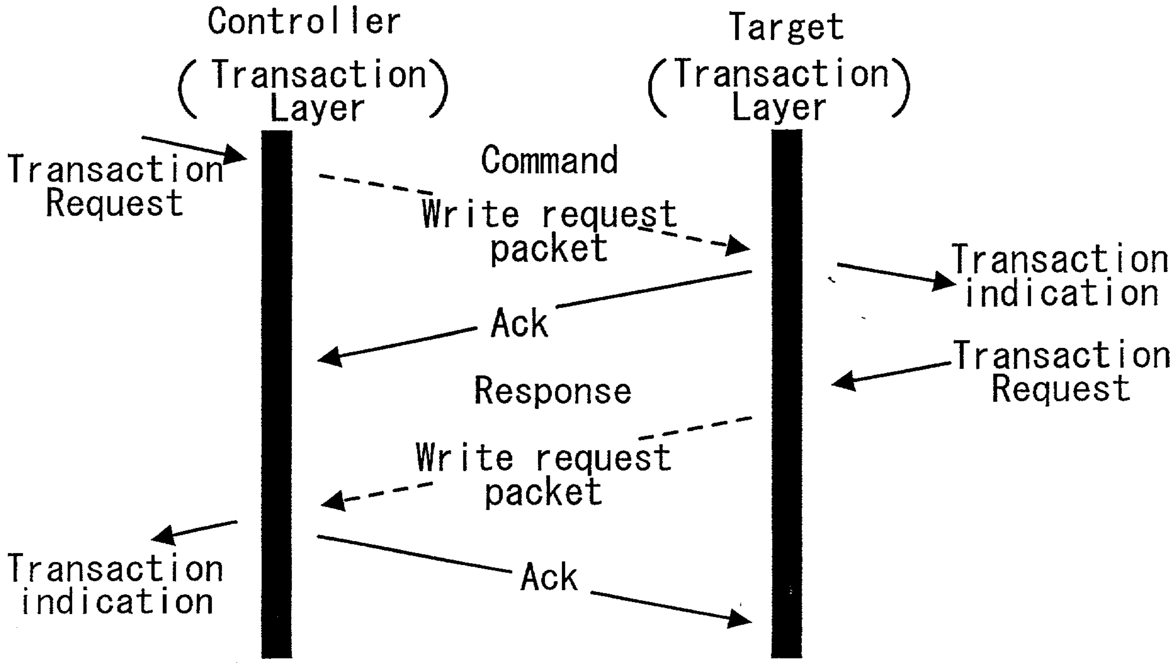

Controller
(Transaction Layer)
Target
(Transaction Layer)
Transaction Request
Command
Write request packet
Transaction indication
Ack
Transaction Request
Response
Write request packet
Transaction indication
Ack

FIG. 15

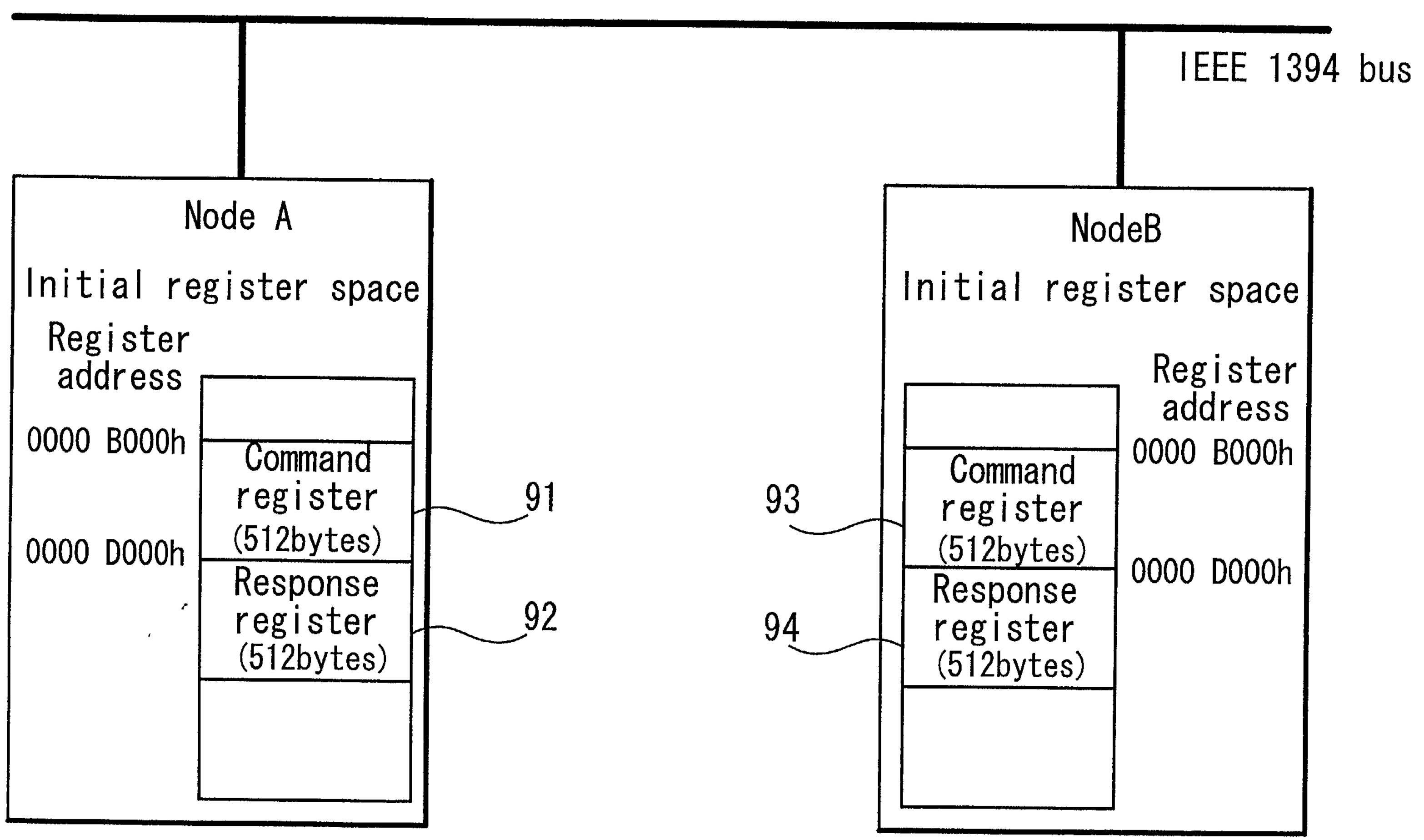
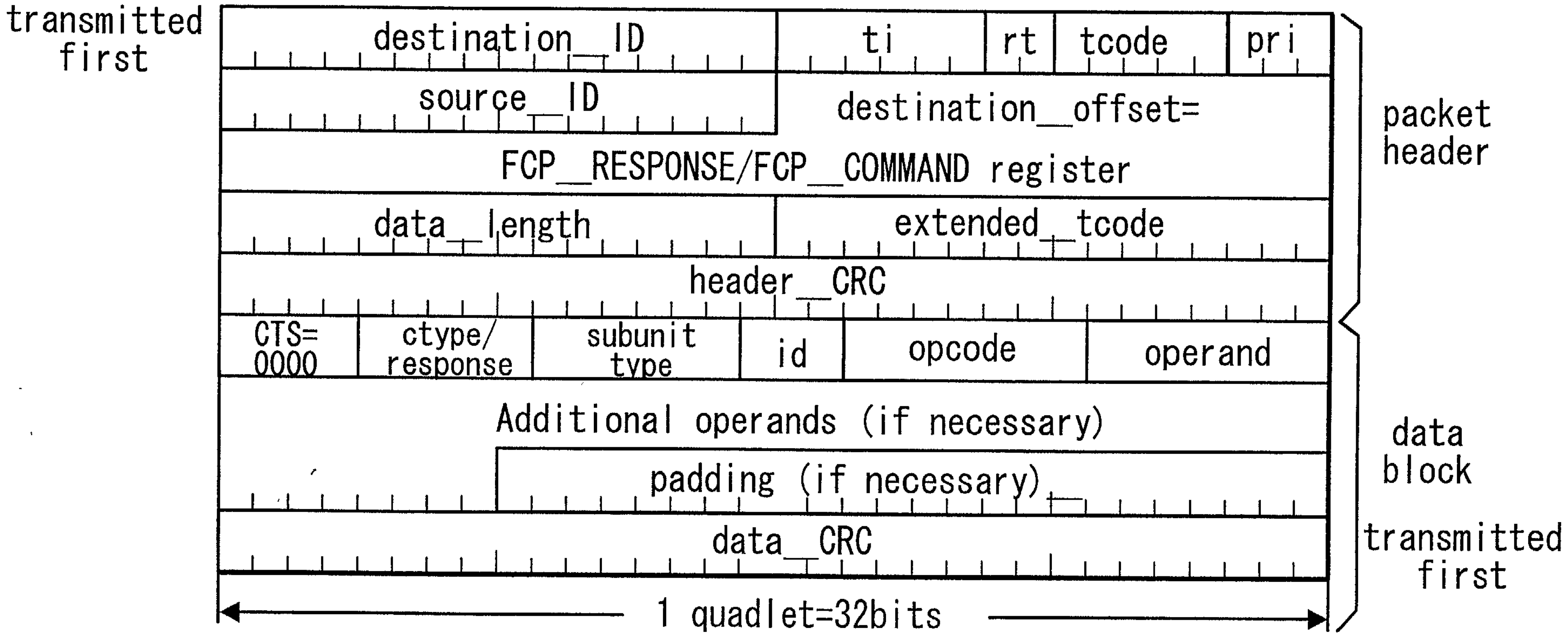

IEEE 1394 bus
Node A
Initial register space
Register address
0000 B000h
0000 D000h
Command register (512bytes)
Response register (512bytes)
91
92
NodeB
Initial register space
Register address
0000 B000h
0000 D000h
Command register (512bytes)
Response register (512bytes)
93
94

FIG. 16

Asynchronous Packet (Write Request for Data Block)



ctype/response

Command	0000	CONTROL
	0001	STATUS
	0010	SPECIFIC INQUIRY
	0011	NOTIFY
	0100	GENERAL INQUIRY
	0101 ~ 0111	(reserved for future spcification)
Response	1000	NOT IMPLEMENTED
	1001	ACCEPTED
	1010	REJECTED
	1011	IN TRANSITION
	1100	IMPLEMENTED/STABLE
	1101	CHANGED
	1110	(reserved for future specification)
	1111	INTERIM

FIG. 17A

subunit__type

00000 ~ 00000	Video monitor (reserved) Disc recorder/Player
00100	Tape recorder/Player
00101	Tuner
00111 ~	Video Camera (reserved)
11100 11101	Vendor unique (reserved)
11110	Subunit type extended to next byte
11111	Unit*

FIG. 17B

opcode:Operation Code

00h	VENDOR-DEPENDENT
50h	SEARCH MODE
51h	TIMECODE
52h	ATN
60h	OPEN MIC
61h	READ MIC
62h	WRITE MIC
C1h	LOAD MEDIUM
C2h	RECORD
C3h	PLAY
C4h	WIND
~	~

FIG. 17C

FIG. 18A

AV/C	control	tape recorder /player	when ID 0	PLAY	FORWARD
CTS= 0000	ctype= 0000	subunit type=00100	id=000	opcode=C3h	operand= 75h

FIG. 18B

AV/C	accepted	tape recorder /player	when ID 0	PLAY	FORWARD
CTS= 0000	response =1001	subunit type=00100	id=000	opcode=C3h	operand= 75h

FIG. 19

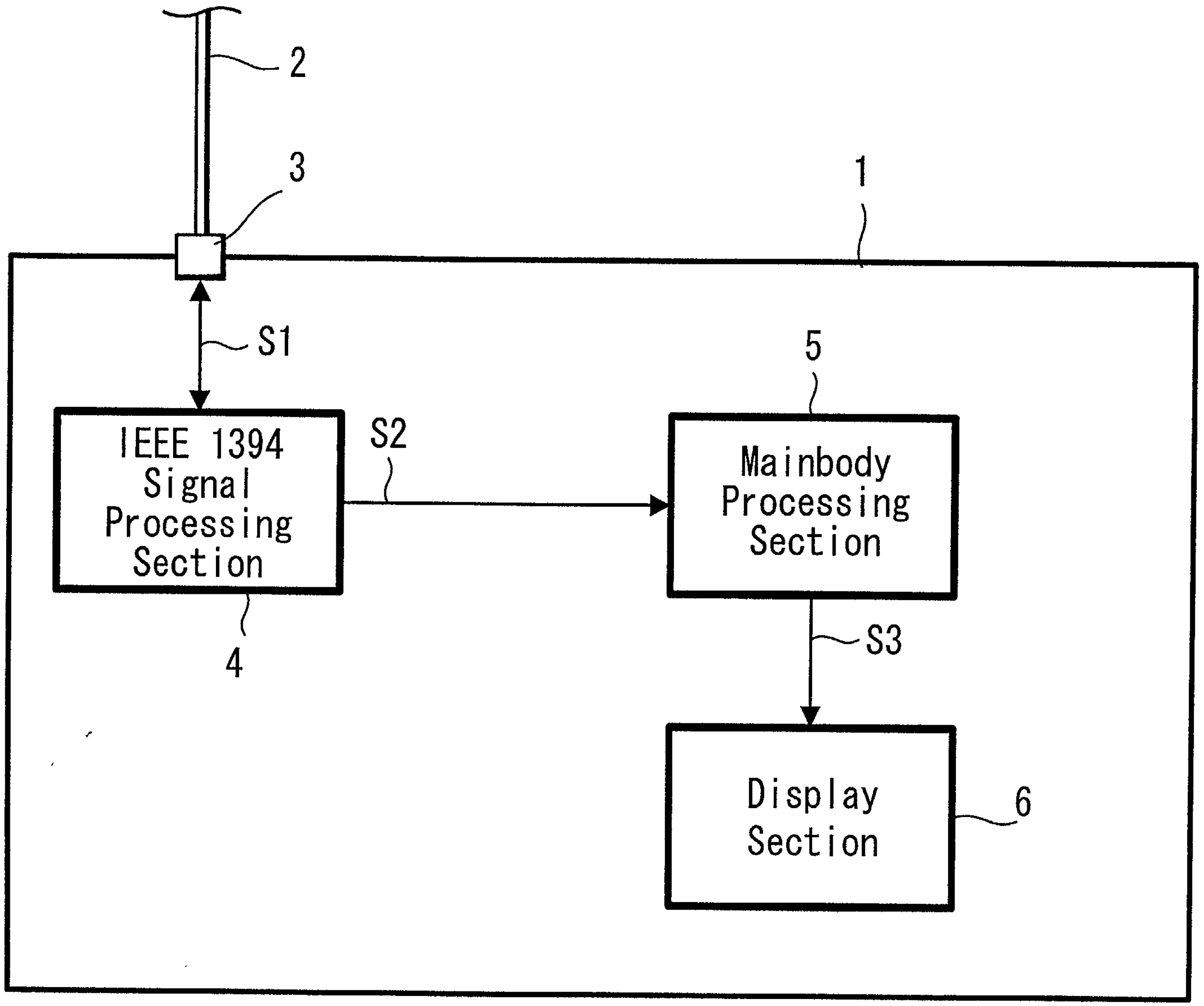

2
3
1
S1
5
IEEE 1394 Signal Processing Section
S2
Mainbody Processing Section
4
S3
Display Section
6

FIG. 20

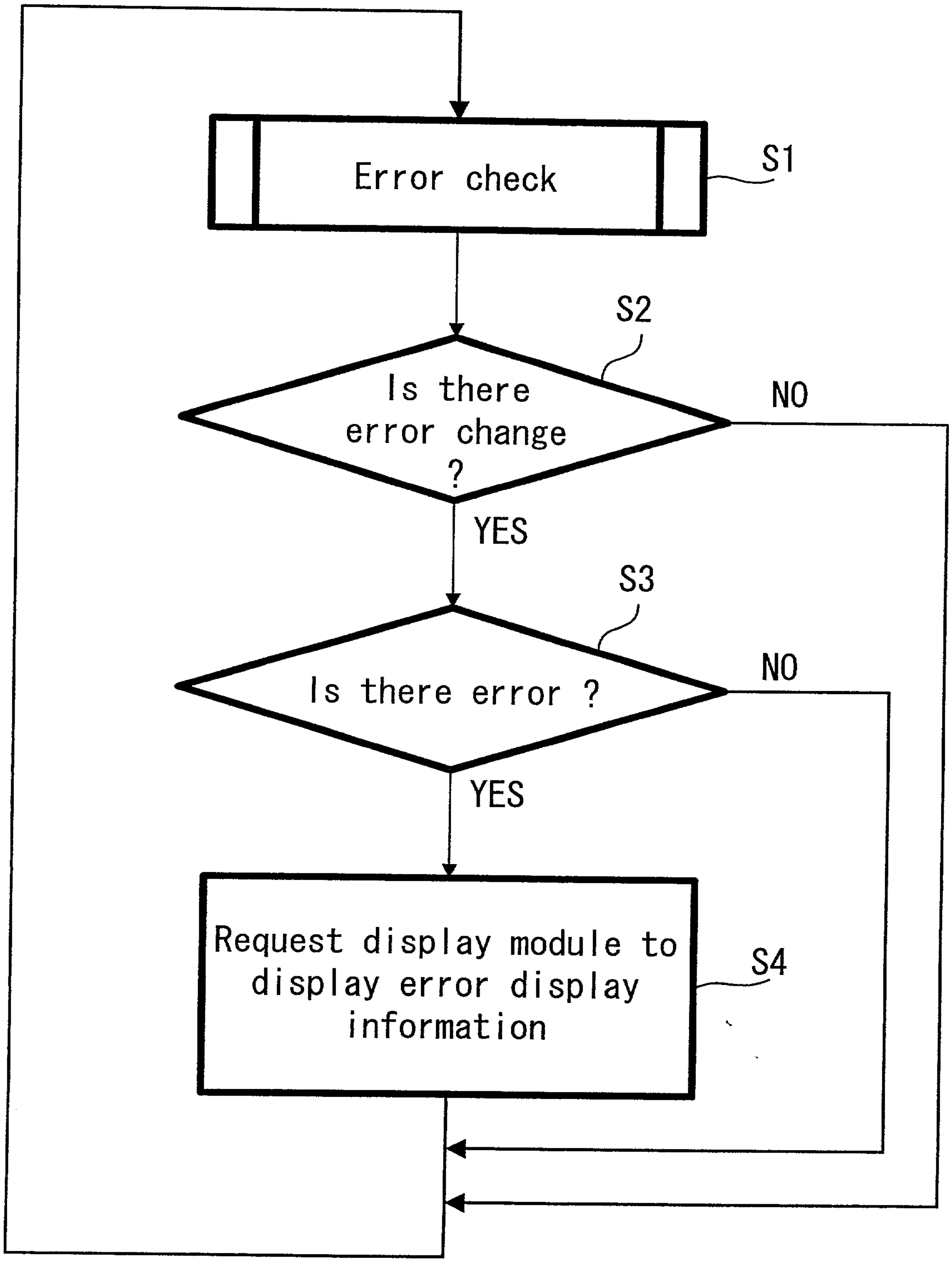

Error check
S1
S2
Is there error change ?
NO
YES
S3
Is there error ?
NO
YES
Request display module to display error display information
S4

FIG. 21

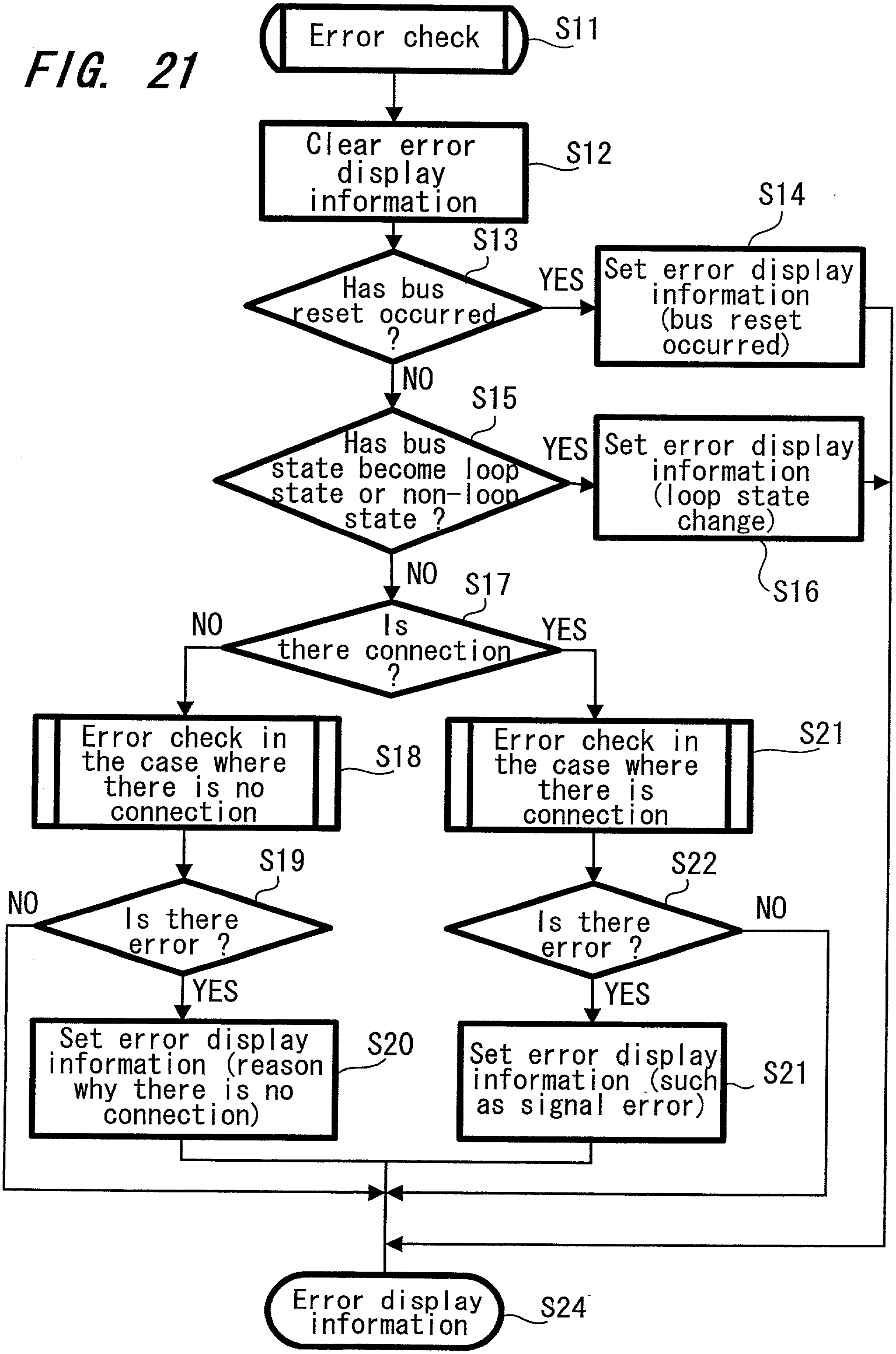

Error check
S11
Clear error display information
S12
S13
Has bus reset occurred ?
YES
Set error display information (bus reset occurred)
S14
NO
S15
Has bus state become loop state or non-loop state ?
YES
Set error display information (loop state change)
S16
NO
S17
Is there connection ?
NO
YES
Error check in the case where there is no connection
S18
Error check in the case where there is connection
S21
S19
Is there error ?
NO
YES
Set error display information (reason why there is no connection)
S20
S22
Is there error ?
NO
YES
Set error display information (such as signal error)
S21
Error display information
S24

FIG. 22

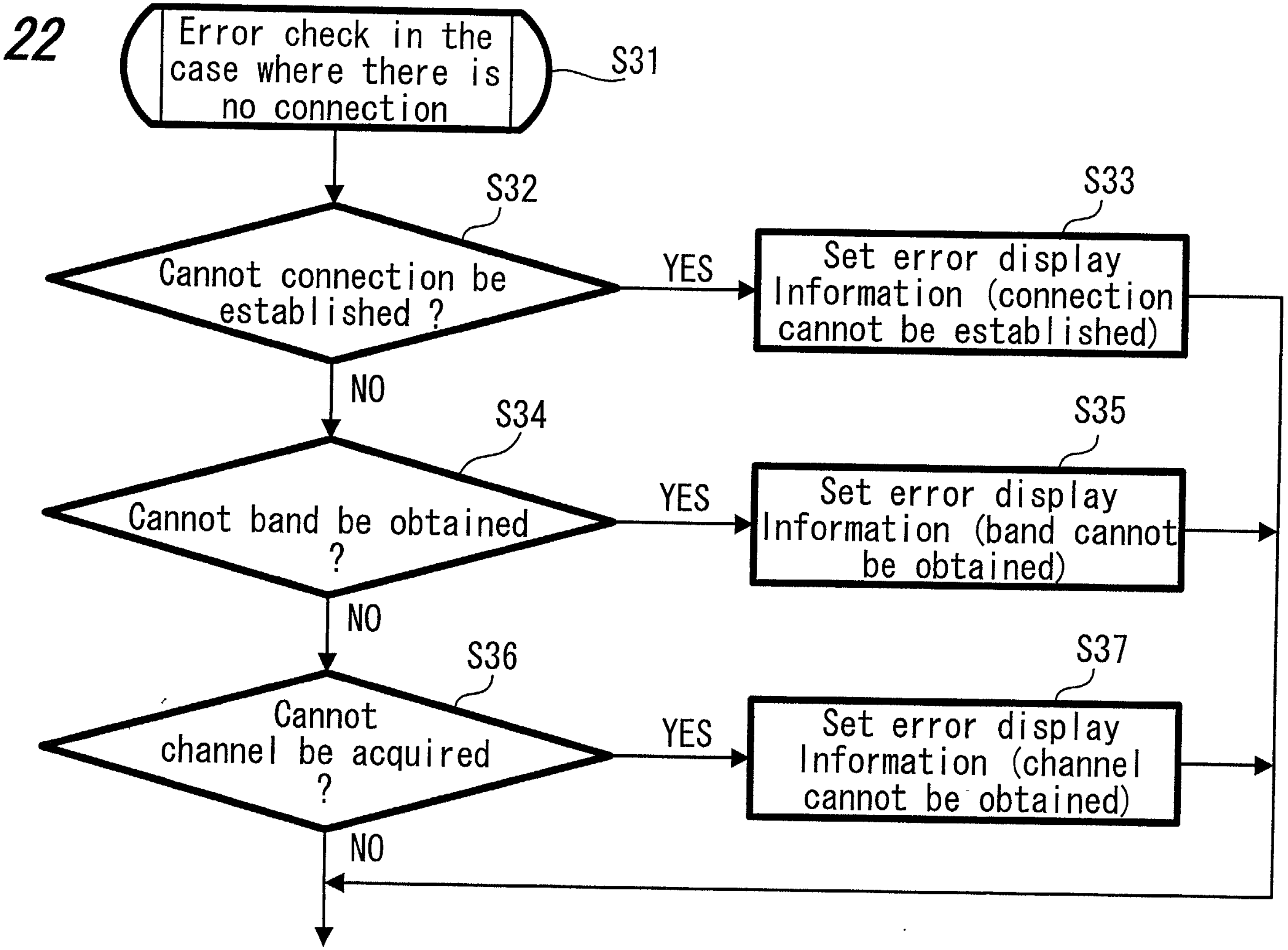

Error check in the case where there is no connection
S31
Cannot connection be established ?
S32
YES
NO
Set error display Information (connection cannot be established)
S33
Cannot band be obtained ?
S34
YES
NO
Set error display Information (band cannot be obtained)
S35
Cannot channel be acquired ?
S36
YES
NO
Set error display Information (channel cannot be obtained)
S37

FIG. 23

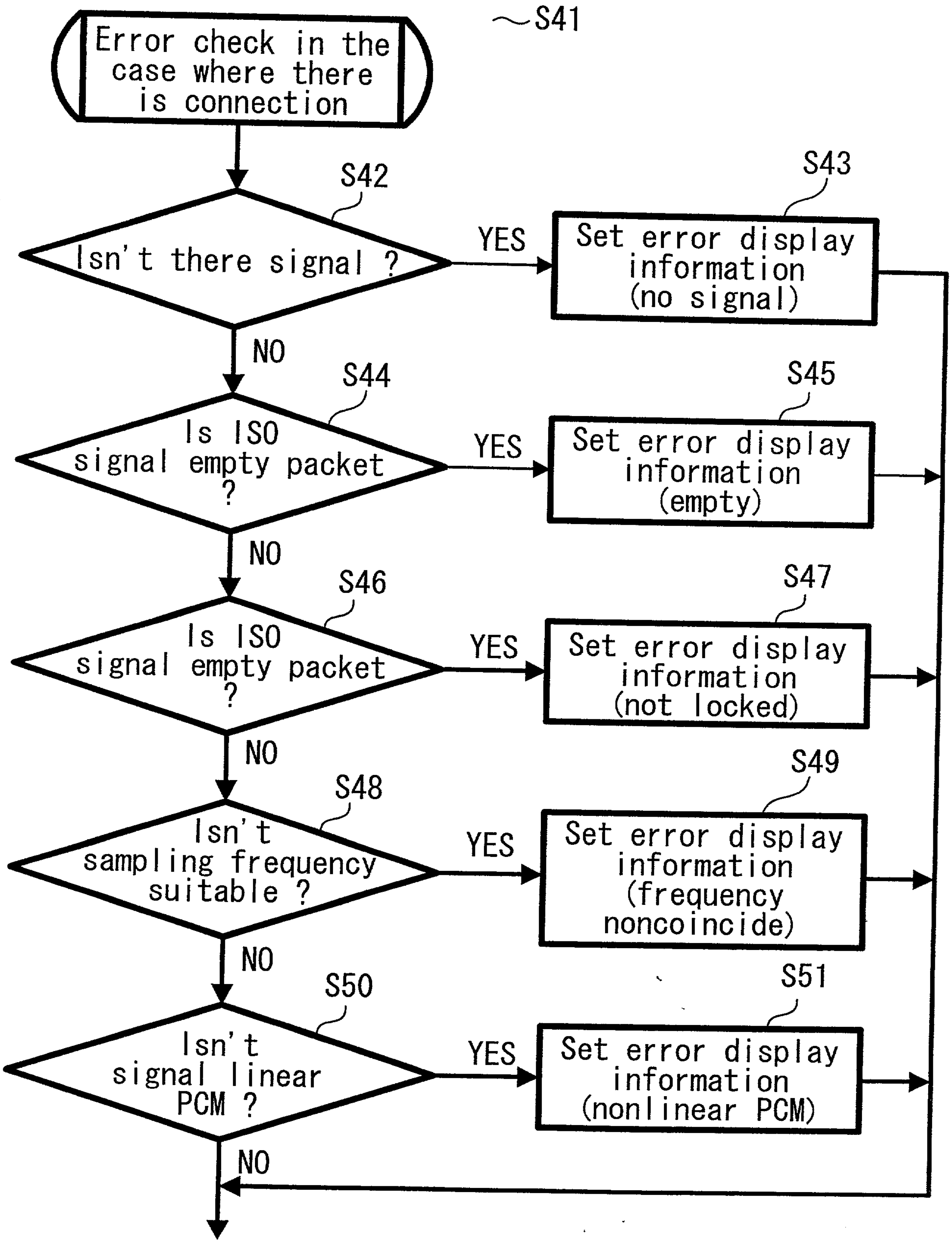

S41
Error check in the case where there is connection
S42
Isn't there signal ?
YES
S43
Set error display information (no signal)
NO
S44
Is ISO signal empty packet ?
YES
S45
Set error display information (empty)
NO
S46
Is ISO signal empty packet ?
YES
S47
Set error display information (not locked)
NO
S48
Isn't sampling frequency suitable ?
YES
S49
Set error display information (frequency noncoincide)
NO
S50
Isn't signal linear PCM ?
YES
S51
Set error display information (nonlinear PCM)
NO

FIG. 24

61

62

Error code number (example)	Display message	
C78:11 (At the time of device selection)	The selected is conduction 63 Lincs and it cannot cope with more Lincs	12 Connection failure of output plug of opposite device side
C78:12 (TUNER, ANALOG)	STR has 63 formed Links and it cannct have more Links	31 Connection failure of its own input
C78:22.22	The case where a different format (signal where cannot be reproduced) it detected	22 The format is not IEC958 format
C78:22.23		23 Discrepancy between N bits (asynchronous) and rate control protocol
C78:22.25		25 The sampling frequency is not suitable
C78:22.26		26 The signal is not linear PCM
C78:31	The case where the signal clock is out of standard values and the PLL lock is not established	24 The signal is unlocked
C78:04	The case where there are not input signals at all during selection of a connection device	21 There are no signal
C78:15.13	Since bus is full of signals output or input cannot be conducted	13 Band is deficient at the time of input
C78:15.14		14 Channel is fully occupied time of output
C78:15.15		15 Band is deficient at the time of output
C78:15.33		33 Channel is fully occupied time of output
C78:03	Loop has been formed by cable connection	
C78:00	Bus reset has occurred (for example in the case where new device is connected)	
C60:01	Temperature within the device is rising	
C60:08	Speaker terminal is short-circuited	
C60:13	Selected device is not connected	

FIG. 25

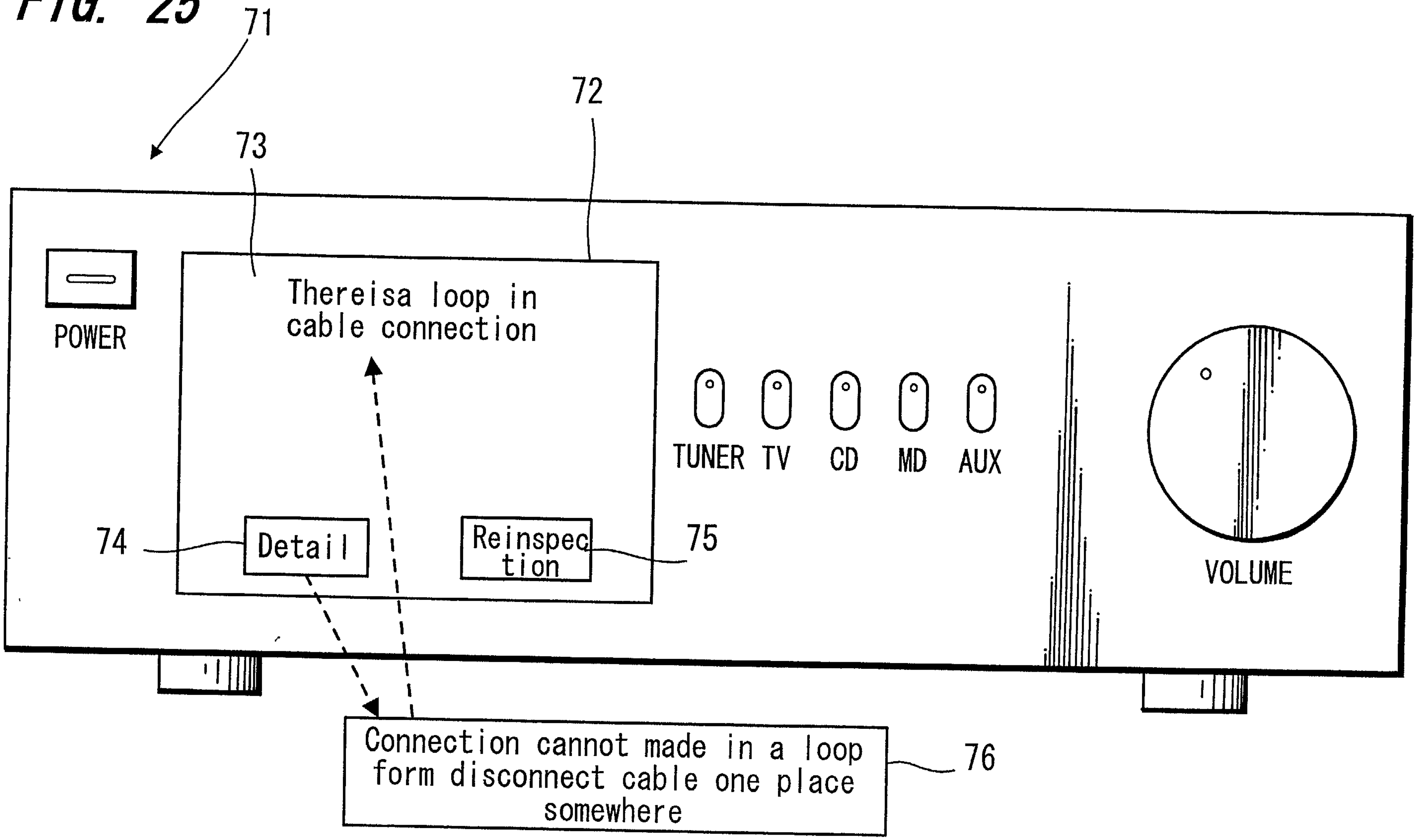
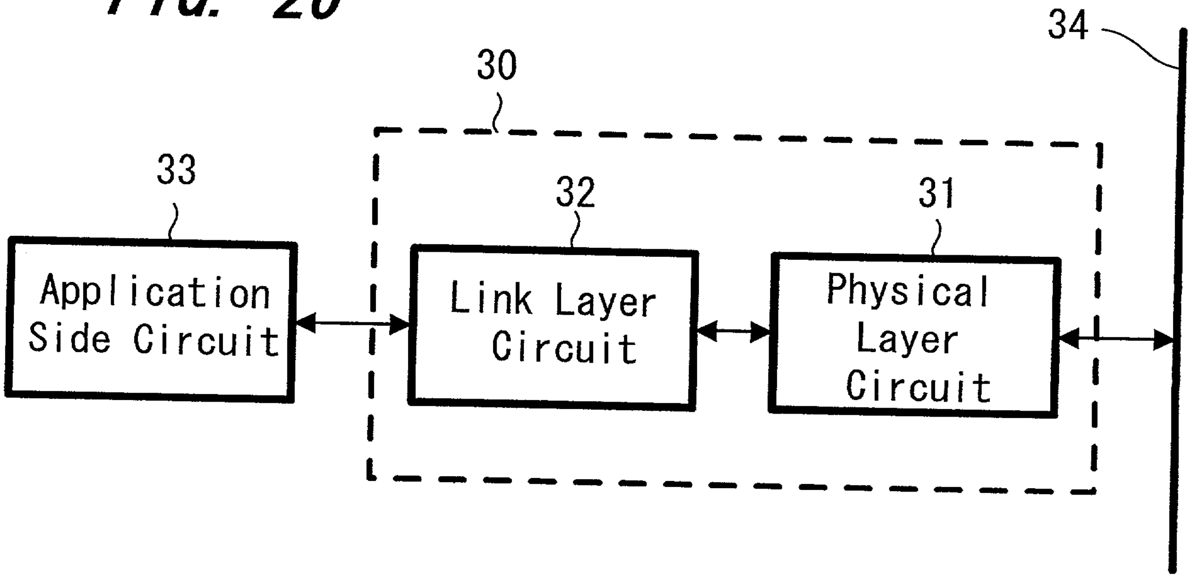
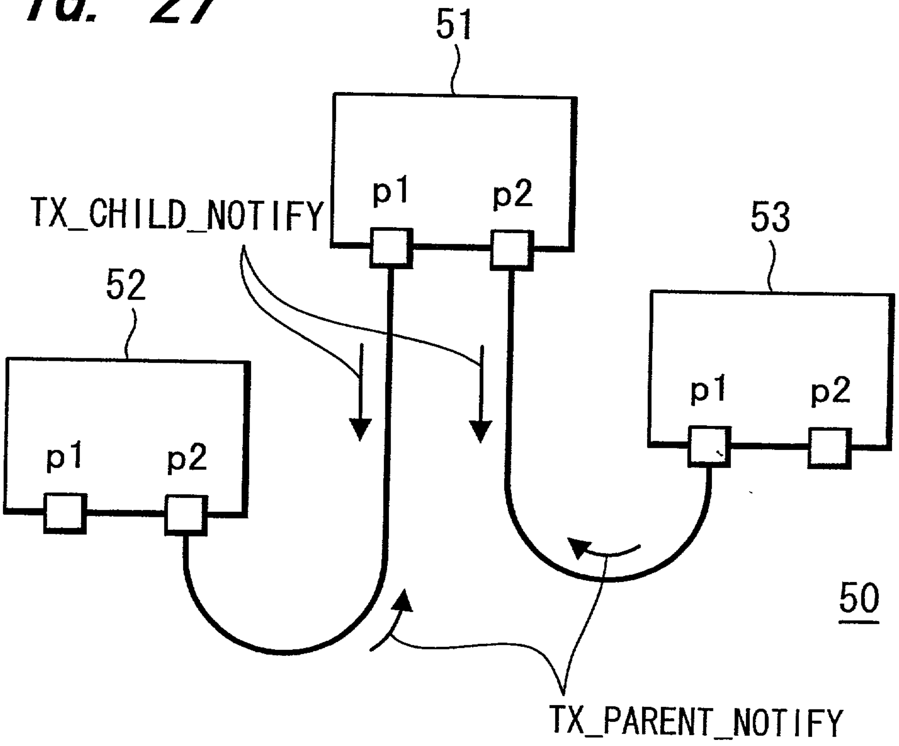

71
72
73
POWER
Thereisa loop in cable connection
Detail
Reinspec tion
74
75
TUNER
TV
CD
MD
AUX
VOLUME
Connection cannot made in a loop form disconnect cable one place somewhere
76

FIG. 26



34
30
33
32
31
Application Side Circuit
Link Layer Circuit
Physical Layer Circuit

FIG. 27



51
TX_CHILD_NOTIFY
p1
p2
53
52
p1
p2
p1
p2
50
TX_PARENT_NOTIFY